

Claims

1. A vibrating portable electronic device (MT), comprising:
 - a body (15);
 - a driving axle (13A) having a rotational axis about which it rotates, the driving axle being rotatably supported by the body;
 - 5 a weight unit (12A&12B;61A&61B) comprising at least one weight (12A,12B;61A,61B) element, the weight unit having a total mass m and being coupled to the driving axle (13A) for being rotated about the rotational axis of the driving axle;
 - 10 wherein the weight unit (12A&12B;61A&61B) has a mass center with an offset r with respect to the rotational axis, so that the vibration of the portable device assumes an amplitude of vibration depending on the product of the offset r and the mass m ; and
 - 15 an electrical motor (11A) for rotating the driving axle; characterized in that the electrical motor (11A) is adapted to adjust the product of the offset r and the mass m .
2. A vibrating portable electronic device according to claim 1, characterized in that the weight unit comprises at least two weight elements (12A,12B).
- 20 3. A vibrating portable electronic device according to claim 2, characterized in that the electrical motor (11A) is adapted to adjust the angular disposition of the weight elements (12A,12B) in order to change the offset r .
- 25 4. A vibrating portable electronic device according to claim 2, characterized in that the weight elements (12A,12B) are on a same axial side with regard to the electrical motor (11A).
- 30 5. A vibrating portable electronic device according to claim 1, in that the weight unit comprises a weight element (12A,12B) on each side of the electrical motor (11A).

6. A vibrating portable electronic device according to claim 1, characterized in that the device further comprises another electrical motor (11B) and a separate driving axle (13B) for the another electrical motor.
- 5 7. A vibrating portable electronic device according to claim 6, characterized in that the device preferably comprises a controller (CPU) for controlling the operation of the electrical motors (11A,11B).
- 10 8. A vibrating portable electronic device according to claim 1, characterized in that the electrical (11A) motor is capable of adjusting the product substantially down to zero.
- 15 9. A vibrating portable electronic device according to claim 2, characterized in that the weight elements (12A,12B) have a common rotational axis and face each other.
- 20 10. A vibrating portable electronic device according to claim 2, characterized in that the device further comprises means (13A,12A2) for allowing the weight elements (12A,12B) to move with respect to each other in order to adjust said offset r.
- 25 11. A vibrating portable electronic device according to claim 10, characterized in that the means (13A,12A2) for allowing the weight elements (12A,12B) to move with respect to each other is adapted to turn the weight elements to a different angular disposition about the driving axle (13A) and with respect to each other.
- 30 12. A vibrating portable electronic device according to claim 2, characterized in that the device further comprises a resilient member (51) for forming an angular torsion force that tries to change the angular disposition of the weight elements with respect to each other to a first angular direction.

13. A vibrating portable electronic device according to claim 7, characterized in that the controller (CPU) is adapted to adjust the rotating power of the electrical motors (11A,11B) so that a desired difference in rotating forces forms equal to the torsion force at the desired amount of the angular disposition.

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14. A vibrating portable electronic device according to claim 2, characterized in that two different angular dispositions of weight elements (12A,12B) are realized by choice of a running electrical motor among the two electrical motors (11A,11B).

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15. A vibrating portable electronic device according to claim 1, characterized in that the electrical motor (11A) is adapted to adjust the product responsive to at least one electrical signal.

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16. A vibrating portable electronic device according to claim 15, characterized in that the electrical signal is selected from a group consisting of: a ringing tone signal, an alarm signal, a notification signal, or a messaging signal.

20 17. A method for vibrating a portable electronic device comprising the steps of:
providing the device with a weight unit having a mass m and a mass center;
providing the device with a driving axle and an electrical motor;
coupling the electrical motor, driving axle and weight unit;
25 rotating the weight unit around a rotational axis by the electrical motor using the driving axle;
positioning the mass center at an offset r with respect to the rotational axis for vibrating the device with an amplitude depending on the product of the offset r and the mass m ;

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30 characterized in that the method further comprises the step of:
adjusting the product of the offset r and the mass m by the electrical motor rotating the weight unit.

18. A method according to claim 17, characterized by said adjusting occurring during the rotating of the weight unit.

19. A method according to claim 18, characterized by the adjusting occurring

5 in response to a triggering event selected from a group consisting of the following: the rotation speed of the weight unit changing to a predetermined level, the rotation speed of the weight unit changing, a change in a melody being played by the portable electronic device, receiving a message, receiving a message from a particular sender, receiving a particular type of

10 message, reaching a time of day, and reaching a date.

20. A method of messaging by vibrating a portable electronic device having coupled an electrical motor, a driving axle and a weight unit having a mass m with a mass center; the method comprising the steps of:

15 receiving a message;

rotating the weight unit around a rotational axis by the electrical motor using the driving axle;

positioning the mass centre at an offset r with respect to the rotational axis for vibrating the device with an amplitude depending on the 20 product of the offset r and the mass m ;

characterized in that the method further comprises the step of:

adjusting in accordance with the message the product of the offset r and the mass m by the electrical motor rotating the weight unit.